

From: "Art Blauvelt" <blauvelt@izglaw.com>
To: "Danica Glaser" <Danica.Glaser@usdoj.gov>
Date: 5/11/2017 2:08:32 PM
Subject: RE: Ocean Gold - materials sent on 11/1/2016, and meeting
Attachments: image002.jpg
Summary of activity at Ocean Cold.docx

Danica:

I have looked back at the email of November 1, 2016, it does appear that I attached the wrong narrative report to that email. I mistakenly attached the October 7 report that Al Carter had sent "Ocean Cold narrative Al Carter 100716" instead of "Summary of activity at Ocean Cold".

I went back to the original email that was sent to me by Al Carter regarding his narrative and confirmed that he had sent me the "Summary" on October 14, 2016. He described the summary as follows:

Attached is the draft of the activity summary for Ocean Cold.

I started on May 23 and documented through October 10, 2016.

I included the APEX reports from their DFR's and the analysis report from Oil Services Laboratories. I did not summarize the report at the end. I did put in a short summary on September 1, 2016 and it is in RED.

Although I saved Al's email and the attachment in Outlook, I apparently did not move the Summary into my computer folder for Ocean Gold. So, when I sent out the email to you dated November 1, 2016 I mistakenly attached the October 7 one page narrative since that seemed to be properly labeled. I should have opened the attachment and made certain it matched the document I intended to send. Also, my description in the November 1, 2016 email should have stated that the starting date was May 23, not May 22, 2016.

Sorry about this error. Please confirm receipt.

Art

From: Glaser, Danica (ENRD) [mailto:Danica.Glaser@usdoj.gov]
Sent: Tuesday, May 09, 2017 7:04 AM
To: Art Blauvelt
Cc: McClintock, Katie; Shirin Gallagher; Broderick, John (ENRD)
Subject: Ocean Gold - materials sent on 11/1/2016, and meeting

Art:

In preparing for the meeting next week we've been reviewing the materials you and the Companies have previously provided. In your email of 11/1/2016 (below), I've noticed an apparent discrepancy. Your email on that date mentions that you are attaching:

"Narrative done by Al Carter that details the events, the leak testing and the efforts to determine a cause. Covers dates from May 22, 2016 (Ocean Gold R22 added to Ocean Cold) through to October 10, 2016."

We did receive an attachment (among several) on that email titled "Ocean Cold narrative Al Carter 100716," which I'm reattaching here. However, the contents of the document doesn't seem to match the description in your email, and I'm wondering if there is another document that was meant to be sent instead. We would like to be sure we have the full picture of the events last summer from the Companies' perspective and so I want to be sure we are not missing an important piece.

Please let me know if there is another narrative from AI that we should have and, if you can, send it along before the meeting.

On another note, I will be circulating an agenda for the meeting tomorrow or Thursday. We have a number of topics we'd like to address and are preparing a presentation. We also have some factual questions about the Ocean Cold loss event, in particular, so it would be helpful to have the staff who were involved in responding to that present at the meeting.

Thanks,
Danica

From: Art Blauvelt [mailto:blauvelt@izglaw.com]
Sent: Tuesday, November 01, 2016 2:23 PM
To: Dugan, Brett <Dugan.Brett@epa.gov<mailto:Dugan.Brett@epa.gov>>; McClintock.katie@epa.gov<mailto:McClintock.katie@epa.gov>; Glaser, Danica (ENRD) <DGlaser@ENRD.USDOJ.GOV<mailto:DGlaser@ENRD.USDOJ.GOV>>
Cc: Albert Carter <acarter@oceancos.com<mailto:acarter@oceancos.com>>; Mark Rydman <mrydman@ocean.onmicrosoft.com<mailto:mrydman@ocean.onmicrosoft.com>>; Benjamin Bale <bbale@oceancos.com<mailto:bbale@oceancos.com>>
Subject: Update on status of Ocean Cold, Consent Decree 3:16-cv-5179
Importance: High

Brett Dugan, Katie McClintock and Danica Glaser:

In response to the letter sent by Director Kowalski and under the terms of the Consent Decree I am providing you with an update on the situation at Ocean Cold. I have been advised by my client that the situation at Ocean Cold has stabilized, the exact extent of R22 loss is not certain at this time and although there is a very strong suspicion as to the cause of the incident, Ocean Cold has not received laboratory confirmation of its suspicion.

Previous Updates to EPA:

I have previously provided updates on the status of Ocean Cold by emails to Danica Glaser and others:

- On September 9, 2016 I notified the EPA of an event at Ocean Cold involving a loss of R22 and indicated that Ocean Cold had technicians from the company that built Ocean Cold on site trying to resolve the problem and determine the cause.
- On September 30, 2016 I notified the EPA that the situation appeared to have been caused by acid in the refrigeration system and that Ocean Cold was replacing seals and gaskets that had deteriorated, presumably from the acid. I advised the extent of leakage was not known at that time. I also attached an email from AI Carter to me dated September 30, 2016 that provided additional information.
- On October 7, 2016 I notified the EPA that Ocean Cold has not been able to establish exactly what happened and the extent of leakage of Freon. I attached laboratory reports that indicated that the Freon in Ocean Cold had become contaminated with acid and that the acid had damaged seals and gaskets. I advised that the Ocean Cold system was running properly. I advised that Ocean Cold was seeking a narrative explanation from its contractor APEX.

Background:

(b) (4)

• (b) (4)

I sent the details of this recovery and conversion to Danica with copies of the documents from (b) (4) On July 5, 2016

detailing that company's actions. Those reports included:

o Letter from (b) (4) dated June 24, 2016 that included the description of their actions as (b) (4)

o The Service Order dated June 14, 2016 said that (b) (4) (b) (4)

o All of the recovered and cleaned R22 had been put into the Ocean Cold system in late May 2016.

o The Ocean Gold Freon was put in Ocean Cold to increase efficiency to take care of the large volume of fish product that was flowing into the freezing plant.

- 7,000 pounds of Freon was purchased from Delarvas USA, LLC of Longwood, Florida and on August 22, 2016 and 6,992 pounds was put into the Ocean Cold system on August 30, 2016 (see attached invoice from Delarvas).

My client advises me that Ocean Cold began to experience issues with clogging ice filters, excess air pressure in air condenser air purge lines, high cold discharge pressures and then leaks and issues with gaskets and seals began to appear shortly after August 30. Ocean Cold called on its contractor, APEX, to come look at the plant to see what was going on. APEX was there on a nearly daily basis from September 2nd until September 23, 2016. I attach the following to help you understand the chronology and the efforts to determine the cause of the loss of efficiency at Ocean Cold:

- Narrative done by Al Carter that details the events, the leak testing and the efforts to determine a cause. Covers dates from May 22, 2016 (Ocean Gold R22 added to Ocean Cold) through to October 10, 2016.
- APEX work Daily Field Reports from September 2, 2016 through September 23, 2016;
- Copies of the hand written maintenance log for the period of August 23, through September 6, 2016 (as requested, the full three months will be provided with detailed report)

Investigation and Repairs:

Immediately upon determining that something was damaging the gaskets and seals in the Ocean Cold system there were efforts to try to determine the source of any contaminant. In early September, Al Carter spoke to (b) (4) of (b) (4) to try to find out if the contaminants could have come from the Ocean Gold R22 recovered and cleaned by (b) (4). (b) (4) said that there was no way that the R22 he recovered was contaminated, (b) (4) said that the recovered and cleaned Freon from Ocean Gold was (b) (4). (b) (4) suggested that a sample of the Freon in Ocean Cold be taken and sent for lab testing. The Freon was drawn, sent for analysis and the report that came back indicated that the Freon was contaminated. The laboratory report was attached to the email sent to Danica on October 7, 2016, I attach another copy to this email.

As soon as it became apparent that something was destroying the seals and gaskets Ocean Cold started removing and replacing all the seals and gaskets in the plant. Some required special orders, however, all the seals and gaskets have now been inspected and replaced. In addition, Ocean Cold, started changing and replacing acid filters built into the system more frequently and added numerous additional acid filters to the system.

Since that lab report Ocean Cold has been tracking down the source of the contaminant by checking the tanks that were used to transport the Ocean Gold Freon and sampling those tanks with residue. Ocean Cold has also contacted Delarvas USA for a purity certification for the Freon sold to Ocean Cold, there was no residue in the empty Delarvas tanks. The samples from the Ocean Gold transport tanks have been sent for lab analysis, however, no results as of today.

Current Status:

Ocean Cold is now operating Freezer B and one spiral freezer unit, and the refrigeration system is functioning properly. Ocean Cold is not operating Freezer A and is not operating the two other spiral

freezer units, however, this is because Ocean Cold is winding down the high volume part of its season. There is no intention to bring Freezer A or the two spiral lines back on line until after the Ocean Cold plant is fully converted to R507.

Planned conversion to R507:

Ocean Cold has determined that it will convert to R507 beginning about the 1st of March 2017. When this conversion is complete, then only the Ice House will continue to use Freon, both Ocean Gold and Ocean Cold will be using only R507.

Ocean Cold has worked hard to stop any leaks, to determine the cause of the deterioration of seals and gaskets and is now going to find out where the acid came from. (b) (4)

or from the Freon sold by the supplier Delarvas. Ocean Cold will continue to get to the bottom of this problem as quickly as possible. It has committed significant funds, personnel time and outside consultants to figuring this out. We hope to have more definitive reports and conclusions by next Monday when a more detailed report is due.

In the interim, I am also attaching the Third Party Verifier report prepared after his visit to the plants on October 19, 2016.

Art Blauvelt

It is okay to print this email. Paper is a plentiful, biodegradable, renewable, recyclable, sustainable product made from trees that provide jobs and income for millions of Americans.

Notice: This communication, including any attachments, may contain information that is confidential and protected by the attorney/client or other privileges. It constitutes non-public information intended to be conveyed only to the designated recipient(s). If the reader or recipient of this communication is not the intended recipient, an employee or agent of the intended recipient who is responsible for delivering it to the intended recipient, or you believe you have received this communication in error, please notify the sender immediately by return e-mail and promptly delete this e-mail, including attachments, without reading or saving them in any manner. The unauthorized use, dissemination, distribution, or reproduction of this e-mail, including attachments, is prohibited and may be unlawful. Receipt by anyone other than the intended recipient(s) is not a waiver of any attorney/client or other privilege.

Arthur A. Blauvelt III
Partner

ablauvelt@izglaw.com
www.izglaw.com

INGRAM, ZELASKO & GOODWIN, LLP
Attorneys at Law

120 East First Street
Aberdeen, WA 98520

Phone: 360.533.2865
Fax: 360.538.1511

Summary of activity at Ocean Cold:

May 23, 2016:

We took the R-22 that had been recovered at Ocean Gold (OG) and began to put it into the Ocean Cold system. There were nine cylinders and the first two went into the Ocean Cold (OC) system. (b) (4) had recovered all R-22 from Ocean Gold. They ran it through their system to strip out the moisture and oil from the R-22. Excess water in the system had been a problem at Ocean Gold for some time. After the R-22 was removed from OG, we literally stuck a propane heater up inside the bottom opening of the LPR to melt the ball of ice and oil that was frozen in there. We documented a considerable amount water and oil separated from the R-22.

May 24, 2016:

We added the other 7 containment vessels of R-22 into the OC system. We added a total of 8952 lbs of R-22 from OG.

May 25, 2016 to June 20, 2016

During this time the system operated well and leak checks were performed. We had no major problems. We did have one oil leak on the B-5 compressor.

June 23, 2016.

This was the first of a series of ice filter changes to the south LPR. We noted an approximate 2 lbs loss of Freon due to the debris in filter. We changed the south LPR filters on **6/23, 24, 26, & 27**. On 7/1/2106 the purge solenoid was sticking, recovered the refrigerant and serviced the solenoid.

July 5, 2016

Discharge valve on north LPR, right side, had a packing leak. Packing was tightened. There was yellow ice that had formed around the valve. We tested with a propane sniffer and estimated that we had a loss of 10 lbs. We had a compressor shut down due to high discharge pressure. Cleared the alarms and started the compressors back up. Turned off the compressors and purged air out of the system. This was the first time we had a high discharge pressure shut down the system.

July 7, 2016

We changed filters on both the north and south LPR's.

July 8, 2016

We rebuilt the inner cooler liquid pump.

July 9, 2016

We changed ice filters on the south LPR. We changed out the heater probe on the H-1 compressor. We took the heater probe out of B-2 compressor.

July 10, 2016

Changed ice filters on both the north and south LPR's.

July 11, 2016

Change ice filters on the south LPR.

July 14, 2016

Liquid pump #1 on North LPR was out of oil. Refilled cylinder with oil, temperature in freezer went down to -10. Changed and cleaned filters on north LPR.

July 22, 2016

Reinstalled heater probe in B-2 compressor removed on 7/9/16. We changed the ice filter on of 92 spiral freezer.

July 23, 2016

We changed the ice filters on the south LPR. We changed ice filters on top of the 106 spiral freezer.

July 24, 25 & 26, 2016

We changed the ice filters on the south LPR.

July 28, 2016

We shut down all compressors and liquid pumps. We opened up the condenser air purge line, relieving excess air pressure from 200 psi to 100 psi. We closed the air line, started up B5 & H2. Ran for 5 minutes then shut down and purged the airline again. This was repeated 2 more times. After the last purge cycle, we started back up the compressors and liquid pumps. We recovered 18 gallons of oil from B3, 30 gallons of oil from B1, 20 gallons of oil from B4/5. We changed ice filters on South LPR.

NOTE: Evacuated refrigeration oil from B-1, B-3 and H-1 compressors into 55 gallon barrels. We hooked up the service hose to service valve off of Viking pump strainer housing flange. We opened the service valve and ball valve on the service hose. Watched the sight glasses to know when the proper amount was evacuated from the compressors. 80 gallons of oil evacuated. Estimated 50 lbs of R-22 lost in oil mixture. We reported this on the Form I of the Ocean Cold workbook.

July 29, 2016

Changed the ice filters on the north LPR

July 30, 2016

We serviced the ice filters on the 76 spiral freezer and changed the ice filters on the north and south LPR's.

July 31, 2016

We changed the ice filters on the north LPR. Serviced the ice filters on 72 spiral freezer after running it for 12 hours. We sniffer tested the entire building and freezers.

August 1, 2016

Serviced the hot gas infeed and outfeed filters on the 92 spiral freezer. We had to shut down and manually purge excess air from the condensers discharge line. We changed the ice filters on the north and south LPR's.

August 3, 2016

We pressure tested the 76 spiral freezer's evaporator. We turned off supply line and opened the solenoid valve. We closed the hot gas return valve and the suction lines on valves. We hooked up a pressure manifold to the service valve on the hot gas return line. We then opened up the hot gas until gage on manifold read 90 psi at 9:45 am. We isolated evaporators #12, #6a, and #6b from the system, we turned off the liquid, the suction, the hot gas and the hot gas return valves. We had to shut down the entire system (compressors, liquid pumps, condensers, etc.) and manually purge the excess air from the condenser discharge. We pressure tested 106 spiral freezer – we closed the liquid valve, suction valve, hot gas feed valve and hot gas return. We opened up the solenoid bypass valves and attached a pressure gauge. We opened the hot gas valve until the system reached 90 psi and then closed the valve. The pressure remained at 90 psi for 12 hours. We returned the system to online conditions. We pressure tested 92 spiral – We repeated the same steps as for 106 spiral and upon bringing the system to 90 psi, noticed an immediate drop in pressure. The 92 spiral failed the pressure test. We shut down the 92, isolated system and informed supervisor of problem.

August 7, 2016

We shut down all compressors, (B4, B5, H2, H3) and condensers due to high cold discharge pressure. We opened up a condenser air purge line to bleed off the excess air from 200 psi to 100 psi. We shut the service valve on the purge line, and started B4, B5, H2, H3 compressors and condensers. We estimated loss of R-22 at (20 lbs). We changed the ice filters on the south LPR.

August 8, 2016

We retested the compressors and condensers for leaks after the high discharge pressure, found no leaks.

August 9, 2016

We evacuated oil out of F-3 compressor Viking pump screen housing flange service valve. We evacuated 25 gallons of oil into a 55 gallon barrel.

August 10, 2016

We shut down all the compressors and condensers due to high discharge pressure. We opened up condensers air purge line to bleed off air from 200 psi down to 100 psi. We shut service valve on purge line and started B4, B3, H2, H3 compressors and condensers. We estimated a loss of R-22, (20 lbs). We evacuated oil (20 gallons) out of the H-2 compressor. We attached service hose to the service valve on the Viking pump house flange and put the other end of the hose into barrel.

August 11, 2016

We retested all the compressors and condensers after high discharge pressure, found no leaks.

August 12,13,14,15, 2016

Leak checks maintained, no additional leaks found.

August 16, 2016

We changed freezer B evaporators from -10 F to -5 F on the sequence panel. We changed ice filters on the south LPR.

August 17, 2016

We changed ice filters on South LPR and added oil to liquid pump on the north LPR.

August 18, 2016

We removed 5 lbs of Freon from the system.

August 19, 2016

We purged system again, started at 1:45 pm. We shut down all compressors and condensers due to high discharge pressure, opened up condenser line to bleed off air from 200 psi to 100 psi. Shut service valve on purge line and restarted compressors & condensers.

August 20, 2016

Changed ice filters on south LPR. Installed replacement gaskets on ice filter strainers on 6a and 6b evaporators in freezer A.

August 21, 2016

Changed ice filters on north and south LPR's

August 22, 2016

Changed ice filters on North and South LPR.

August 23, 2016

Changed the ice filters on North and South LPR. We pressure tested 6a - 6b evaporators. The 6a was 100 psi and 6b was 75 psi with hot gas.

August 24, 2016

We changed ice filters on the south LPR. Pressure test on 92 spiral freezer and west ice machine. Closed off liquid valves on 92, hot gas and hot gas return. Let line go into a vacuum through the suction line and closed the suction valve. We slowly opened up the hot gas valve until there was 100 psi of positive pressure. We kept pressure for four hours and then took it off the test. On the Ice machine, we closed the liquid valve and let the machine go into a vacuum through the suction line. We closed the suction valve, once it was under a vacuum, and opened up the hot gas valve to put pressure into the machine. Pressure held at 100 psi for four hours with no change and we took it off the test.

August 25, 2016

We performed a hot gas pressure test on evaporators 6a, 6b, 7, & 8. We opened the gas valve to pressure up the evaporators to 100 psi. We checked pressure with a gauge manifold. We shut off the hot gas valve when pressure hit 100 psi.

August 26, 2016

We removed 35 gallons of oil from H2 compressor. We removed 15 gallons of oil from H3 compressor. We changed ice filters on north and south LPR's. Evaporators 6a, 6b, & 8 were down 10 psi and evaporator 7 was down 15 psi after the pressure test.

August 27, 2016

We changed ice filters on the north and south LPR's. Evaporators 6a, 6b and 8 were down another 12 psi. Evaporator 7 down was down 15 psi.

August 28, 2016

We changed Ice filters on the North and South LPR's. We checked the hot gas pressure test and all the evaporators were down in pressure. Evaporator 6a, 6b, 7 & 8 were down 35 psi.

August 29, 2016

Changed ice filters on North and South LPR's. A pump seal failed on the North LPR, (#1 liquid pump). We isolated the pump and pulled it down to vacuum. We switched over to pump #2. We put evaporator 6a, 6b, & 7 on a nitrogen test. We hooked the service hose up to service valve on the hot

gas line. On evaporators 6a & 6b, the gauge manifold was hooked up to suction line. We brought it to 100 psi. On #7 the gauge manifold was hooked up to the liquid line.

August 30, 2016

We changed ice filters on the North and South LPR. We manually purged the system excess air in the condensers. We introduced 6992 lbs of R-22 into the system. We received seven (7) 1000 lb. cylinders and entered the R-22 into the suction line behind the north LPR. We hooked a service hose to the liquid side of the vessel and the other side of hose to the suction line. We opened valves to introduce R-22 to the system. We brought the vessels into the compressor room to bring the vessels into suction while evacuating. We had each vessel on a scale and weighed each to know how much R-22 we were putting in the system. We used compressor B-1 to bring vessels into suction. We hooked up a service hose to the suction side of B-1 compressor and the other side to the liquid side of vessel. We opened the valves and evacuated the remaining R-22 from each vessel. Evaporator #8 had a leak on the check valve on the hot gas line. The cause of the leak was a gasket failure. We unbolted the flange bolts, took out old gasket and replaced with a new one. We tightened all the bolts back up. Then we put evaporator #8 into a Nitrogen test. We hooked a service hose up to hot gas service valve and the other side to a nitrogen vessel and regulator. We hooked up a gauge manifold to the liquid line service valve, and turned on the valve. We brought the pressure up to 100 psi. We checked evaporators 6a, 6b & 7. Evaporators 6a and 6b held 100 psi of pressure. Evaporator 7 was down to 40 psi.

August 31, 2016

The limit switch on pump #2 on the north LPR failed. We replaced it with a new. We changed ice filters on North and South LPR's. We removed pump #1 from the north LPR for rebuild. We rebuilt pump down in the compressor room with a pump rebuild kit.

Note: At this point we had suffered numerous failures of components. All leaks were recorded. The amount leaked will be noted as unknown until a complete shutdown and pump out is possible.

We have had removed approximately 250 gallons of oil. We were changing ice filters for both the north and the south LPR's on a daily basis and all filters for the spirals freezers. Our experience at Ocean Gold showed that water in the system comes out through the ice filters. Water in the system also shows up as ice within the system.

The system was being manually purged to relieve the excess discharge pressure. At this point we did not know what was causing it. We purged it 4 times (8/1,7,10 & 19) and we had high discharge pressure on (8/7 & 19).

On August 30, 2016 we added 6992 lbs of R-22 into the system.

APEX technicians were called to come into the plant. Comments from APEX were, "at some point the contamination, (acid), damage to the components and loss of refrigerant the system shuts down and won't run.

On September 2, 2016 the APEX technicians arrived.

September 1, 2016

We turned off all the fans on the condensers. We completed a sniffer test with a propane sniffer on the West side of condensers. No leaks. We sprayed all valves with soap water, all passed. We shut liquid line going into south LPR to get liquid to go to the north LPR. For 4 hours, we pressure tested 76 and 92 spiral freezers. Closed the liquid line, the hot gas and hot gas return valves to bring lines into a suction. We checked the suction with gauge manifold. Shut suction valve and hooked a service hose up to hot gas line service valve put 100 psi into lines.

September 2, 2016

The APEX guys arrived at 1:30 pm and started leak checks and evaluating the system. We slugged outside condensers to see if anything was stuck inside. We pressure checked #1 at 100 psi & #2 evaporators, (ok). Pressure checked 92 & 76 spirals. We pressure checked 106 and the inside bank lost pressure, 100 psi down to 60 psi. The 106 strainer was leaking. We repaired it and reinstalled it. We were manually pumping liquid to the end freezer. We pump liquid from the other end back to the end freezer. We leak checked engine room and found some small leaks found. We found two valves

(2 & 3) had bad valve seals and were leaking by, (Hanson valves). We checked the solenoid liquid valve on the north LPR. We shut the valves and hooked up a service hose to service valve and the suction valve to evacuate. We unbolted the flange to check the inner valve assembly. The valve was good. We closed it up and put it back on line. We checked 76 & 92 spiral freezers. (psi test held 100 psi for 24 hours), took it off the test. We opened the suction line, hot gas return, hot gas and liquid valves. The 106 pressure test: closed liquid valves, hot gas and hot gas return. We checked with gauge manifold for vacuum and it checked out ok. We shut the suction valve and hooked up a gauge manifold to the hot gas return service valve. We hooked a service hose up to the hot gas service valve and the other side to a nitrogen vessel. We opened the valves brought pressure up to 100 psi, (106a & 106b). Condenser #1 pressure test: closed inlet valves and output valves. We closed the main purge valve. We opened the solenoid purge cross over valves.

We hooked up a service hose up to the service valve on the purge crossover line and hooked a service hose up to compressor B2 suction side and evacuated the condenser. We took the hose end that was on compressor and hooked it up to a 6 pack of nitrogen cylinders. We brought the condensers to 100 psi. We put a vacuum pump on the line, brought to -30 psi and opened all valves for operation. We tested at 100 psi for 6 hours. We checked the ice filter on evaporator #11. We shut the liquid line and heated up filter housing with a torch. We shut hand expansion valve. We hooked up gauge manifold to check for vacuum. We took the flange bolts out to the check filter. The filter was good, put filter back in & tightened flange bolts and opened valves.

APEX report 9/2/2016: Drove to the job site from shop. Arrived at 1:00 pm. Checked out the situation and leak checked condenser valves with soap bubbles and leak detector. Started checking compressors in the engine room.

September 3, 2016

With the help of APEX leak checking continued throughout the plant. We began changing strainers and filters on every component and vessel. We pressure checked condenser 1 & 2 and found no leaks.

The condenser #2 pressure test: shut inlet and outlet valves and main purge valve. Opened purge crossover solenoid valves, put a service hose on the purge crossover service valve. We put the other end of hose on to B2 compressor suction side. We opened the valve to evacuate. Once the condenser was evacuated we took the hose off of the B2 compressor and hooked it up to 6 pack of nitrogen. We opened valve and brought the condenser to 100 psi for 6 hours. We then brought the condenser back to atmospheric pressure. We hooked up a vacuum pump and brought the condenser to -50 psi. We opened the condenser back up for operation. We held 100 psi test for 6 hours. Condenser #3: shut all purge valves and drilled a hole in line and welded a 1/4 FNPT coupling in line and added service valve. We opened the purge valve and tested the weld with soap water, weld passed. Ice machines: we isolated the ice machines both north and south. We closed the liquid line valve. We opened the liquid line solenoid bypass, we opened the liquid line expansion valve and allowed the suction to continue until a deep vacuum was reached. We then closed the suction line. We hooked up a nitrogen pack and filled system to 100 psi. We repeated the above steps for 2nd ice machine. We placed 106 side A back to 125 psi with nitrogen.

APEX report 9/3/2016: Checked the rest of the compressors in the engine room and moved out to checking the north freezer. Checked out evaporator #5 and evaporator #3. Found nothing wrong on evaporator #5. We found multiple leaks on evaporator #3 liquid feed valve group. Removed the valve for repairs. Found piston seal on liquid solenoid valve. We have no replacement parts.

September 4, 2016

APEX replaced the valve stems on #1, 2, 3 & 4 evaporators in freezer A. Condenser #3 was placed on a Nitrogen pressure test at 100 psi. The Ice Machines north and south held 100 psi for 24 hours. We removed the nitrogen charge and hooked up a vacuum pump and brought systems down to deep vacuum. The Ice machine passed the pressure test. Spiral 106 both A & B coils passed nitrogen test.

APEX report 9/4/2016: Checked the rest of north freezer and found the liquid valves on evaporators 1, 2 & 4 were all leaking. Found replacement pistons at PermaCold in Portland and the customer sent someone to pick them up. Rebuilt and reinstalled liquid feed valve groups on evaporator evaporators #1, 2 & 4. All new gaskets and O-rings on all.

September 5, 2016

We pulled and checked liquid level probe at end LPR for freezer A. We cleaned it and reinstalled it. We reinstalled liquid pump on LPR and put under a vacuum. APEX rebuilt 4 valves in freezer A, (Hanson 1"), and we began the inspection on freezer B. We pressure checked condenser #3 & # 4. Condenser #3 had

no leaks after 6 hours. We turned evaporators 1 & 2 off and set point to (+) 1- degrees in freezer A. We reinstalled #1 liquid pump and limit switch, placed into a vacuum.

APEX report: Leak checked south freezer coils found leaks on evaporators #9 & #10. Customer repaired evaporator #9. Unable to get evaporator #10 isolated, the main valve not holding. Need to replace bonnet. Drove to Portland for a flight home.

September 6, 2016

We checked liquid pumps and #1 & #3 are ready for rebuild. We pressure tested the #4 condenser at 100 psi for 6 hours. The condenser passed the pressure test. We evacuated the #5 condenser and set up a nitrogen pressure test. We brought the condenser up to 100 psi. We inspected evaporator #9 and found a leak liquid line solenoid valve body O-ring. We isolated the line and placed on vacuum.

September 7, 2016

We pressure tested on condenser #5 for 24 hours. The condenser past at 100 psi. We hooked up a vacuum pump and pulled system down to a deep vacuum and returned the condensers to online. We inspection the #9 evaporator liquid line valve body. We replaced the O-ring on bottom of valve body, the solenoid, O-ring, sealing O-ring, solenoid gasket, valve body stem, and valve body gasket. Pressure test with nitrogen at 100 psi starting at 2:00 pm. We changed the ice filters on south LPR.

APEX report 9/7/2016: APEX personnel traveled home.

September 8, 2016

We isolated and recovered the north LPR #3 liquid pump. The pressure test held on #9 evaporator. We hooked up vacuum pump, brought it down to a deep vacuum and returned it to service. We found a leak on the main feed top valve on pump #3 on the north LPR and discharge side strainer. We have ordered parts for the stop valve. The strainer leak was 2 loose bots on valve body. We tightened the bolts and it passed a soap test. Pump #2 North LPR had a leak on discharge side of strainer valve body, tighten bolts, passed soap test. Pump #1 North LPR same as #2. We tightened the bolts and it passed a soap test.

APEX report 9/8/2016: APEX had P & ID's made for Ocean Cold plant. They gathered parts needed to make repairs on compressor H-1 and shipped them to the job site. They scanned the pump manual and emailed it to Dave McClung at Ocean Cold.

September 9, 2016

We changed the O-ring and gasket on the discharge side strainer on Pump #3 South LPR. We put it on a Nitrogen test at 100 psi for 2 hours. It passed the soap test.

APEX report 9/9/2016: Mike Gaehler traveled to job site.

September 10, 2016

We placed the north LPR pump #3 into vacuum. Once pulled down it was returned to service. It passed a soap test, passed sniffer test and was switched on. The north LPR pump #1 was isolated from the system and hooked up to a suction line for recovery. We installed bearing kit, replaced the gaskets. It passed the nitrogen test and passed the soap test. We hooked up to a vacuum pump. After the unit was pulled down to a deep vacuum it was placed back online.

APEX report 9/10/2016: Put #1 pump online after rebuild. Pulled #3 pump and rebuilt it, no major signs of damage. Found that #1 was done backwards. Re-installed #3 pump and put online. Customer is going to pull and fix #1 pump.

September 11, 2016

The north LPR liquid pump #2 was isolated from system and we hooked up to the suction line for recovery. The Inner liner of the pump has what appears to be stress fractures. We took pictures and sent to APEX. Awaiting confirmation on pump viability for repairs. Installed stop plates and gasket to seal up valve bodies where pump attaches at North LPR.

APEX report 9/11/2016: Pumped down #2 pump and pulled it out. Found major damage inside pump and oil in the electrical box. Need a new pump, informed the customer.

September 12, 2016

Performed a sniff test of the north LPR liquid pumps and found a leak on the north LPR ice filter gauge. We isolated and recovered gauge lines. Replaced lines with new copper tubing, new fittings, and new gauges. Retested and it passed soap and sniff test. Isolated H-1 compressor from system. We hooked up suction line to B-2 compressor for recovery. Awaiting replacement discharge check valve from APEX. Shut down entire system with exception of condenser water pumps. Allowed to sit one hour, then performed manual discharge of excess air from purge line.

APEX report 9/12/2016: Found compressor H-1 discharge check valve leaking by in to separator. Isolated and pumped compressor down. Discharger pressure got high and shutdown plant for a while and bled air. Started system back up, pressure stable now.

September 13, 2016

Added H2O to the glycol expansion tank (3 gallons).

APEX report 9/13/2016: Checked out system and helped customer charge glycol system.

September 14, 2016

Pulled out evaporator #10 liquid valve, strainer and check valve. Unbolted valves and strainer from liquid line, brought them down to bench for rebuild. Changed all the gaskets, O-rings, seals and packing. Took back in freezer A and reinstalled. Had to do a manual air purge of system due to compressor shutdown (H-3) due too high of discharge pressure.

APEX report 9/14/2016: Replaced tubing on compressor H-1 with new stainless steel tubing. Pulled machine into a vacuum, it did not hold. Pressurized with nitrogen and found a leak on oil return metering block. Need new metering valve for it. Removed liquid solenoid valve group from evaporator #10 and rebuild valve and strainer, then reinstalled. Evaporator #10 back online. Had problems with discharge pressure and had to shut down system and purge air. System back on line and pressures are stable.

September 15, 2016

Boiler tech was here today and performed a total test on all condensers. Took old sump pump out and put new van pump in. Took the pump out of sardine pond. We power washed top of the condensers.

APEX report 9/15/2016: Took sample of oil in system and found acid in oil. Cleaned condenser #1 mist eliminators and checked sprays. Found header plugged with mud in last 3 feet of pipe. Checked out temperature reports given to me by Mark to try to figure out what caused problems. Problems started on month after introducing refrigerant removed from Ocean Gold facility.

September 16, 2016

Found a leak at the auto purge station in the engine room. Isolated the purge awaiting info on rebuild kit. Were able to tighten packing of valve stem, stopped leak. Leak found on south LPR ice filter gauges. Isolated from system, used suction line for recovery. Replaced gauges, filters and copper supply line. Passed sniffer and soap test. Opened back up suction on north LPR to pull out accumulated vapor. After a vacuum was reached we closed off suction. Will check again tomorrow before starting nitrogen test of north LPR and Freezer B.

September 17, 2016

Put back up wall separating freezer A from B. Turned down North LPR receiver fill control solenoid from Fill <65% to Fill <50%.

September 18, 2016

Shut down freezer B and South LPR. Turned off liquid line to south LPR and manually opened all hot gas solenoid plungers and all hot gas return plungers. Hooked up service hoses to the hot gas and hot gas

return valve bodies at south LPR. Left suction lines open to evacuate freezer B system. Installed proper 1" psi check valve on engine room purge. The purge is now operating properly. We shut down the main suction valve on north LPR at 3:45 pm due to high discharge pressure (208 psi). Discharge pressure is coming down since valve was closed. Had to shut down B-2 compressor due to too much suction. 6:00pm.

September 19, 2016

Put evaporators #16 and 17 back on line to help remove moisture from freezer hallway. Raised temperature from -15 to -17 on evaporators 11, 12, & 13 in freezer A.

September 20, 2016

Changing our system dryers, replacing standard Sporlan RC-110098 filter with Sporlan RC-10098-HH to help lower acid content within the system. There are 10 dryer tubes in total and 4 dryer cartridges per tube. Isolated the dryer tube, hooked up suction line, after unit achieved vacuum, we removed suction line, opened the unit up and changed out dryer filters, closed unit back up, hooked up vacuum pump and let run until a deep vacuum was reached and sustained. Returned tube to service, passed sniffer and soap test, repeated above steps for the remaining 9 tubes.

September 21, 2016

Started at 7:30 am to fill north LPR & Freezer B with nitrogen (100 lbs. to start). At 10:00 am filled north LPR & Freezer B with nitrogen up to 150 lbs. There was no pressure drop at 10:00 am when brought up to pressure. Turned off fans on condenser #2 and cleaned air fins with pressure washer, returned to service.

September 22, 2016

Finished the nitrogen test of North LPR/Freezer B. Held at 150 psi for 24 hours. Opened drain line, purged nitrogen, removed grit from lower drain stem access. Inserted inspection camera, observed water condensation inside tank. Closed the system backup and hooked up vacuum pumps and took the system down to a deep vacuum. Once in a vacuum we filled system back up to 20 psi with nitrogen, purged nitrogen and began vacuum cycle again. This was done again at 2:00 pm and once more at 6:00 pm. Due to high head pressure had to shut down the system and perform a manual purge of air from the condenser.

APEX report 9/22/2016: Checked pressure on north freezer, pressure held. Bled off pressure and pulled into a vacuum and broke with nitrogen. Instructed the customer to do it one more time at night.

September 23, 2016

Started another cycle of nitrogen/vacuum purges on North LPR/Freezer B system, filled to 20 psi of nitrogen, purged nitro, brought down to a deep sustained vacuum, then started again with 20 psi of

nitrogen. This was done first at 7:00 am, 11:00 am, and 3:00 pm. At 6:00 pm removed vacuum pump filled with 20 psi of nitrogen. Took oil samples from compressors, H-3, B-2, B-3 sending to Oil Services Laboratories for testing.

APEX report 9/23/2016: Broke north Freezer with nitrogen and put back into vacuum. Traveled home.

September 24, 2016

Let nitrogen charge out of north LPR/Freezer B system. We hooked up vacuum pump and pulled down to 14 hg, left system isolated.

September 25 & 26, 2016

Continued performing leak checks throughout the system.

September 27, 2016

At 4:30 am the slide valve seal went out on H3 compressor, causing an oil leak. Oil went through the conduit and ended up on a circuit board. We shut discharge valve and left suction valve open until compressor had atmospheric pressure. Then it was shut as well. Will be off line until parts arrive.

September 28, 2016

H-1 compressor: opened discharge and suction valves then started compressor. When pressure went up the main oil feed line from the pump to the filters came off (on the pump side) the tube was not pushed in all the way. It didn't seat right when it was replaced, causing an oil leak. Shut off the discharge, suction and crossover service valves. Installed new tube and compression fitting. Hooked service hose to H-2 compressor discharge and the other side to suction side of H-1 to pressure test the tube. Brought pressure up to 80 psi. Used soap to check for leaks, no leaks found. Reopened all valves, cleaned up oil. Manually purged the system. Fired off H-1 again, ran for about 30 minutes then the shaft seal started leaking. Shut off compressor and isolated it to fixed the leak. We estimated a loss of approximately 50 lb. of R-22 and 50 gallons' oil. We opened all valves on spiral freezer 106 and started B-1 and B-4 compressors to see how 106 was working. Everything seemed to work good. On the H-2 compressor the pump shaft bearings flange was leaking a small amount of oil, took off and replaced O-ring and reinstalled.

September 29, 2016

We are running production today running B-1, B-2, B-3, H-2 and H-4 compressors. On the H-2 compressor, changed O-rings and outer shaft seal and reinstalled. Pressurized compressor to 80 psi and the shaft seal held. Opened all valves and started compressor and let it run for 5 minutes. We then noticed that the slide valve housing on the pump side, had a small oil leak. We turned compressor back off and isolated it. We put it on a suction with a B-2 compressor. Took it off of suction once it went to atmospheric pressure. We hooked up a service hose to the service valve on the upper side of filter

housing to drain oil out of H-1. We turned on oil pump to push the oil out into a 55 gallon drum. We took the front of the slide valve housing apart on H-3 compressor to see why it was leaking it seemed to be the unloader radial bearing what had come apart and damaged the unloader cover internal teflon cap seal.

September 30, 2016

We changed out H-1 compressor discharge check valve and gaskets. Took out filters and cleaned strainer in line before the Viking oil pump. We charged the compressor with nitrogen up to 20 psi through the suction side service valve. We then discharged out of the service valves on the strainer flange, the filter flange and the bottom of compressor to help push as much oil out as possible. We manually purged the system due to high discharge pressure. We changed the fan belt on fan #2 on #2 tower.

We received the analysis report from Oil Services Laboratories. The acid levels are high, iron appears to high and there are trace amounts of copper.

October 1, 2016

We took apart the slide valve assembly for rebuild. We are waiting for a rebuild kit for H-3 compressor.

October 2, 2016

We took apart the slide valve assembly for rebuild. We are waiting for a rebuild kit for H-1 compressor.

October 3, 2016

We turned on evaporator #10 and set parameter from 0 to -20. The double drum screens motor burned up due to vibration causing wire to chafe in the flex conduit, also burned up contactor due to same problem. We replaced motor, wire and contactor with new drained gear box oil because the gear box had too much oil in it.

October 4, 2016

We turned on the evaporator fans for evaporator #1 and #5 in free B to help dry out the floor. Changed evaporator settings in the sequence panel for evaporator #2, #3 and #4 from -5 to 50 degrees in order to clear alarms. We changed evaporators #1 and #5 to 49 degrees. Manually purged system due to high discharge pressure. Condenser pump went out. We started to disassemble for rebuild.

October 5, 6, & 7, 2016

Waiting on parts for rebuilds. Continued leak checking and monitoring system. Only running Freezer A, one spiral and have approximately 20% in the LPR.

October 8, 2016

Put two 1500 psi pressure relief valves on hydro, (TMR). We manually purged refrigeration system to removed excess air.

October 9, 2016

Waiting on parts. Continued to leak checks and monitor system.

October 10, 2016

On the H-1 compressor we changed out the cylinder plate internal O-ring, the unloader piston external teflon cap seal, the unloader piston external O-ring, the bulkhead external O-ring, the unloader cover external O-ring, the unloader external retaining ring and the unloader cover internal teflon cap seal, replaced all old with new. We reinstalled the unloader cylinder housing and the unloader cover. We tightened the flange bolts to 150 foot lbs. with a torque wrench. We then nitrogen tested the compressor, (set to 50 lbs.), and soap tested all fittings and flanges. No leaks were found. We then set the nitrogen test to 100 psi and will check tomorrow to see if the test has dropped any psi. We changed the feed belt tensioner switch in the 106 spiral freezer. The fire alarm went off at 8:00 pm due to the cleaning crew opening the back door to Freezer B.

